SCHICK
Dentalgeräte

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Original

Operating Instructions
SCHICK - Milling machine S2 Master

We are pleased that you decided to buy a highly developed piece of equipment from SCHICK and would like to wish you every success when working with your new milling machine S2 Master.

We wrote these operating instructions to enable you to get accustomed to your new piece of equipment and to provide you with the correct operating and maintenance instructions.

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Serial parts	art.-no.
milling machine S2 Master complete consisting of	2700
milling machine S2 Master	2705
C2 Motor incl. milling spindle and cable	6200/09
light equipment	2510
mains cable	2160
collet chuck Ø 2,35 mm stroke for short tools	4114 4918
chuck key	4115
counter stay wrench	6223
hexagon socket wrench w.a.f. 2	W602000200
hexagon socket wrench w.a.f. 4	W602000400
dust protection cover	2502
optionally:	
collet chuck Ø 3 mm stroke for short tools	4117 4925

2. Range of Applications

The S2 Master milling machine is designed for use in dental laboratories when trimming crowns and bridges, respectively acrylic and chrome cobalt dentures.

Highest precision and quality and minor maintenance are the merits of the S2 Master which has been developed by experts in milling technics.

Conditions of environment:

- interior 5° - 40°
- up to 2.000 meter over sea level

Categorie of overvoltage: II
Grade of pollution: 2

3. General Information/Safety informations

- Ascertain that your mains supply coincides with the data in the rating plate

- The milling machines S2 Master are not suitable for the following applications:
  - in areas where there is a risk of explosion
  - for medical applications

- Ensure that all regulatory requirements are observed during use (always waer protective glasses).

- **Under no circumstances should the milling machine be cleaned with compressed air**

- To keep the precision and the lifetime of the chuck always insert a rotary instrument or the pin, supplied with the unit, page 13 (6) - even if the motor stands still.

- Recycling WEEE-Reg.-Nr. DE 78620387

ATTENTION::

- Water-cooled turbines are only indicated to use in connection with a SCHICK suction tub to avoid defects at the elctrical equipment and corrosion.

- When using rotary instruments, do not exceed the maximum speeds laid down by their manufacturer.

- Repairs and other technical procedures must only be carried out by suitable qualified personnel, authorized by SCHICK.

- SCHICK do not guarantee the S2 Master milling unit should it not have been used in accordance with the operating instructions

- For defects occured by using the S2 Master milling machine in another way or by inappropriate handling the manufacturer rejects any liability.

These operating instructions should be readily accessible and are best kept close to the milling machine itself!

4. Installation

pict. 1

- Check the package for visible damages
- When unpacking handle all parts of consignment with care.
- Remove carefully the upper part of the inside package (withdraw slowly (pict.. 1).
  Please look that parts of the milling machine do not become wedged with the package.

pict. 2

- Remove cartons containing accessories (pict.2)
  Please look for the milling arm being fixed.
- Hold the milling machine at the column
  Do not hold at the milling arm !
- Withdraw the machine a little bit and then hold it at the basic plate to take the milling machine out.

- Check all parts for visible damages. Place all parts of inner package back into the outer carton.
  Store the complete package for an eventual return to manufacturer.

If you should intend to destruct the package, please be so kind to return the complete package to SCHICK.

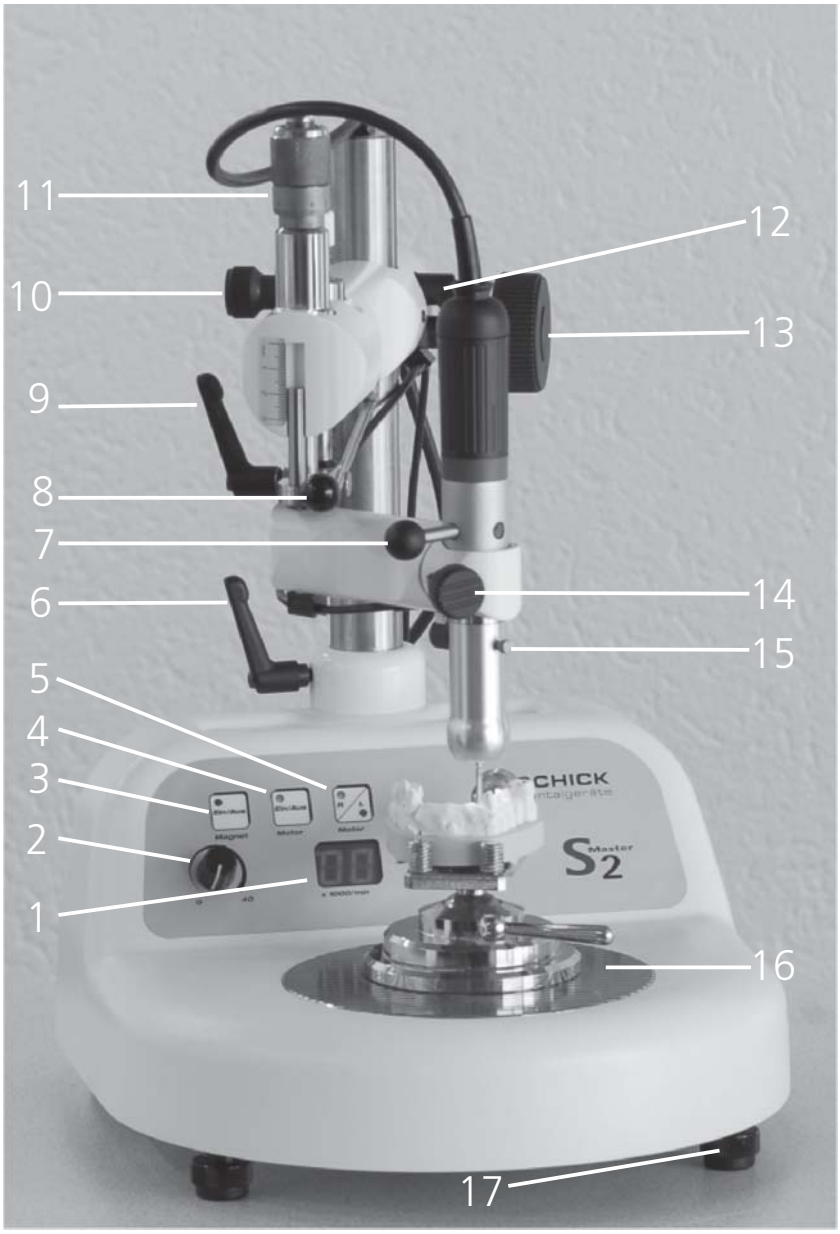
Setting up

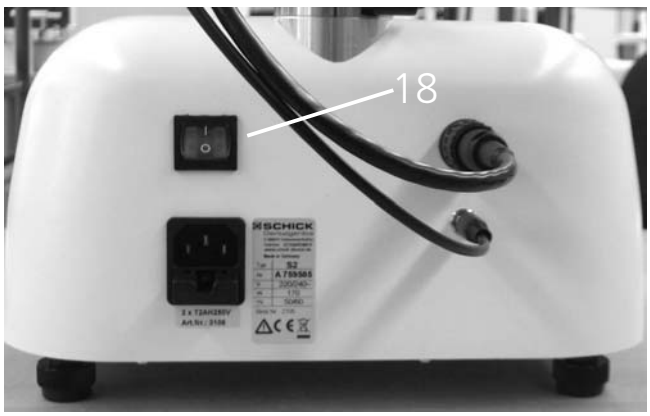
The S2-Master is equipped with adjustable stands. When using a level for telescopic crowns, the S2-Master has to be calibrated exactly with a spirit level by screwing the stands clockwise or anti-clockwise.

Connect the milling machine with the mains supply by placing the mains cable at first into the socket situated on the back side of the milling machine and then into a safe wall socket with earth connection.

Please check that all plug connections are readily fixed !

5. S2 Master





1. digital indicator
2. speed selection
3. switch “Magnet-EIN/AUS”
4. switch “Motor-EIN/AUS”
5. switch “Motor-R/L”
6. clamping lever jointed arm
7. tension lever
8. lever
9. clamping lever milling arm
10. knurled nut depth fixation
11. fine adjustment depth stop
12. clamping lever jointed arm
13. adjusting knob jointed arm
14. knurled nut milling spindle
15. knurled nut light attachement
16. magnetic table
17. adjustable stands
18. mains switch

6. Short instruction into operation

activate mains switch (18)

milling arm

jointed arm
- Fastening and loosening with clamping lever (6)
- loosen clamping lever (12); for height adjustment use handwheel (13)
- position of clamping lever can be adjusted at any position desired by pulling and turning

vertical arm
- adjust vertical arm at any position using clamping lever (6)
- use lever (8) to draw spindle down
  fine adjustment through micrometer spindle (11)
  milling spindle
- tension lever (7) showing to the left when chuck is closed

operating unit

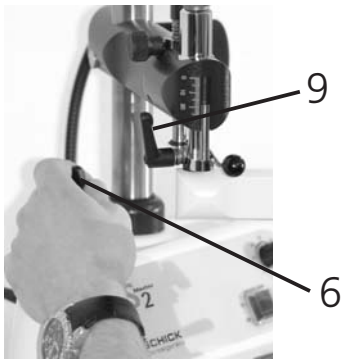
- motor on/off with swith „Motor - EIN/AUS“ (4)
- speed adjustment variable with speed selector (2) - digital indicator (1)
- magnet on/off with swith „Magnet - EIN/AUS“ (3)
- changing rotation of milling spindle by using switch „Motor - R/L“ (5)

Important!
Detailed description see point 7 „Operation“

7. Operation

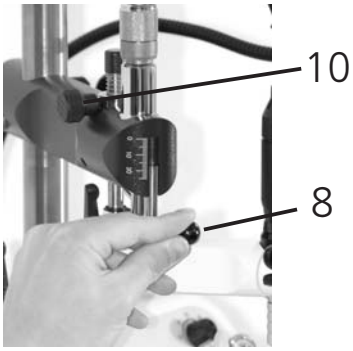
To activate the electric press mains switch (18) „I/O".
Now all electric functions are controllable. To switch the unit off press mains switch (18) again.

7.1 milling arm/jointed arm



pict. 1

The milling- and the jointed arm has 2 joints for an absolutely free moving space. To fix the milling arm on the horizontal plane you can use the levels (6+9), therefore it is possible to make bores and to fix.

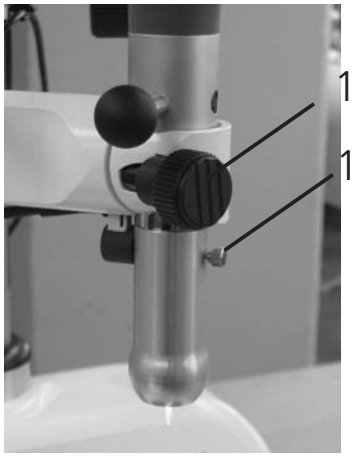


pict. 2

For a delicate vertical movement of the spindle with fixed hinges loosen the knurled nut (10) and use the lever (8). With the vernier (11) the maximum travel to depth can be restricted. This assures exact guidance when drilling Interlooks.

pict. 3

If, for example, the milling spindle should be fixed in a deep position when fixing a part of an attachment, the milling arm has to be moved downwards (see pict. 3) at the spring mounted the guide bar. Then the position can be fixed with the knurled screw (10).



pict. 1

milling spindle

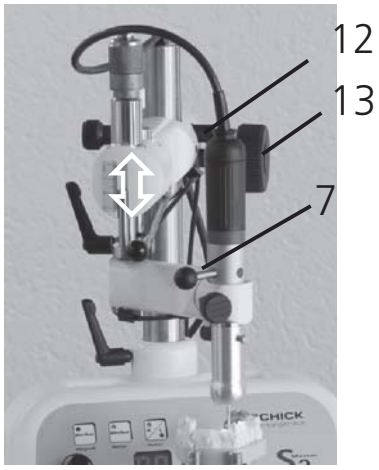
To remove the milling spindle detach light equipment and loosen knurled nut (14) (pull spindle out upwards). To detach the light equipment loosen knurled nut (15) (pict.1) and pull light equipment carefully down.
Put light equipment on again in reverse order.

When replacing the milling spindle pull down until stop.

Please pay attention that the thread pin placed in the spindle holder clicks into the notch at the milling spindle.

The lever (7) (pict.2) at the milling spindle has to show into the left direction. Tighten knurled nut (14).

Function of milling spindle see see on page 11.



pict. 2

Height adjustment

To adjust the height of the milling arm fist loosen the lever (12).
Then using the adjusting knob (13) to put the milling arm up or down according to your needs.

pict. 3

measuring spindle

The measuring spindle (pict. 3) is supplied as accessory and can be placed into the spindle holder in the same way as the milling spindle.

Direction of rotation of milling spindle

To change direction of rotation of milling spindle use switch „Motor - R/L“ (5). If motor is running the direction right or left is shown through a green light in the switch. It is also possible to change the direction of rotation when motor is running.

7.2 magnetic table

magnetic platform

To fix the model table or other accessories in the center of the magnetic platform an electro-magnet is placed (16) which is operated via the switch „Magnet EIN/AUS“ (see page 7; no. 3).
To clear the platform you can easily take away the particles with a brush through the paralle grooves.

7.3 motor technology

The milling unit S2 Master is equipped with the C2 technology.
This means extrem and stable torque in all speed ranges, silent and vibration free running and highest balance.

With its 40.000 r.p.m. and 240 watt power the C2 milling spindle masters even the hardest grinding and milling.
Attention: Use only tools which are in accordance to the working speeds!

Maintenance of motor and spindle see „Maintenance and Care“ (point 10; page 14)

The integrated light equipment guaranties excellent illumination and visibility of the working area.
Due to the direct connection with the milling spindle it‘s not necessary to place the light always into the right position. Light exactly where it is needed. The light equipment is joined with a plug connection and can easily be removed and attached. The light intensity can be adjusted by the dimmer knob (see page 6).

Please be informed that the light luminesces a little after switching off the milling unit.

Removal of light equipment see „Operation - milling spindle“ (point 7.1; page 10)

8. Exchanging the rotary instruments

The chuck is opened by turning tension lever (7) to the right till it stops.
When the shaft of the rotary instrument is placed into the chuck turn tension lever to the left till it stops.
With regard to the precision and service-life of the chuck, an instrument or the pin (6) must always be inserted into it - even when the spindle is not in use.

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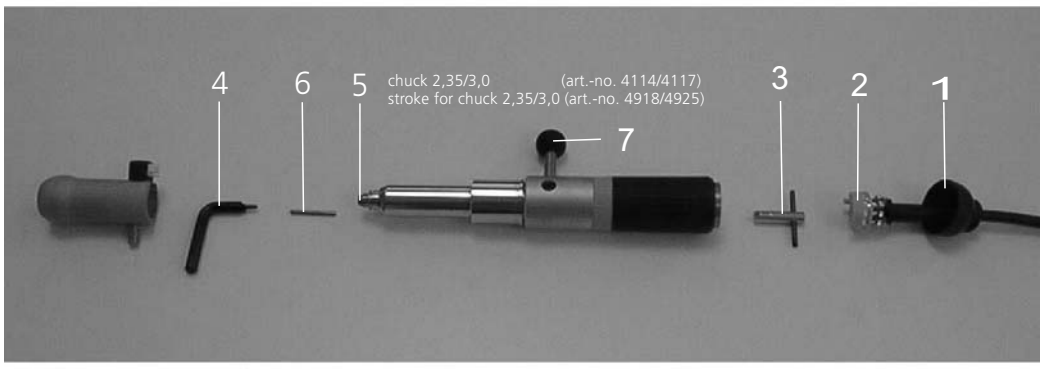
CAUTION: Only ever exchange the rotary instrument with the motor switched off! **Risk of damage !**

9. Replacing the chuck

- Take milling spindle out of the spindle holder

see "Operation - Milling Spindle" (point 7.1; page 10)

- Open chuck and remove the rotary instrument.
- Remove motorcable. Unscrew cap (1) from motor and loosen cable by pulling out the plug-in seal (2) Please insure that the chuck is open.
- Use a number 6223 wrench (3) to hold the motor end of the spindle.
- Engage the triangular section of the chuck (5) with a number 4115 tool (4) Hold tight No. 6223 (3) wrench and screw out the chuck by turning the tool no. 4115 (4) anti-clockwise.
  The chuck has a right-handed thread !
- Clean the chuck, grease its outside lightly and place it in the spindle. Use the tools as described to screw the chuck in - clockwise and as far as possible **and tighten it slightly.** Replace the plug-in seal (2) and screw the cap (1) back into place.
- Replace milling spindle in spindle holder.



10. Maintenance and care

CAUTION!: Do not clean milling machine and milling spindle with compressed air!

The chuck should be cleaned and re-greased once in a while, depending on how dirty it is

see "Replacement of chuck" (point 9; page 13)

- As the C2 milling spindle has no commutators, carbon brushes or ventilation parts, no further maintenance is required.

- All guideways are maintenance free.

For cleaning please use only a brush!
Before cleaning please switch the milling machine off and withdraw mains plug !

11. Possible faults

- Should the milling spindle be overloaded, respectively, jammed, for safety reasons the unit will switch off.
- turn speed selection (2) back to "0-postion"; select the desired speed and the machine is ready for use again.
- alternatively switch mains switch (18) off and on again.

If after that the machine is not working please check the fuses and replace them if necessary. The fuses (230V→ 2x T2AH250V art.no.:3106) (100-115V 2x T4AH art.no.: 7306) are to be found beside the socket for the mains cable.

Should it not be possible to abolish the faults please contact SCHICK directly

12. Technical data

Rated voltage:	230V / 115V / 100V
Rated frequency:	50 / 60 Hz
Torque Motor:	5,5 Ncm
Speed range:	2.500 - 40.000 min
Concentricity:	< 0,015mm
Chuck:	- 2,35 mm standard incl. stop for short tools - 3,00 mm as option
Width:	275 mm
Height:	485 mm
Depth:	400 mm
Weight:	16 kg

Accessory

Model table Art.-No. 2407

Measuring spindle Art.-No. 2250/1

Holding tray Art.-No. 2509

Milling tray Art.-No. 2507

Adaptor Art.-No. 2508

Adjustable angle Art.-No. 2506

Koordinate table Art.-No. 2505

Milling set 2,35 mm
(7 pcs.) Art.-No. 2530

Ceramic set S2 Master

turbine Art.-No. 2640/1

model table stainless steal Art.-No. 2407/9

separator Art.-No. 2655

suction tube Art.-No. 2470/1

light head for turbine
Art.-No. 2510/1

Polish set Ø 2,35 mm
(3 pieces) Art.-No. 2665

Diamond Tool Set for Turbine Ø 1,6 mm
(8 pieces) Art.-No. 2660

S2 Master

S2 - Ceramic milling set complete	**Art.-No. 2650/41**
(without milling unit)	
turbine	Art.-No. 2640/1
adapter	Art.-No. 2481
holding clip	Art.-No. 2793
lighthead for turbine	Art.-No. 2510/1
suction tube	Art.-No. 2470/1
separator	Art.-No. 2655
model table stainless steal	Art.-No. 2407/9

13. Declaration of Conformity

We, GEORG SCHICK DENTAL GmbH
Lehenkreuzweg 12
D-88433 Schemmerhofen

CE

declare herewith, that the product

Milling machine S2 Master Art.-Nr. 2700

is in conformity with the following provisions of Directive:

2001/95/EG	(general product safety)
2006/42/EG	(machinery directive)
2006/95/EG	(low voltage directive)
2004/108/EG	(EMV directive)

Name and adress of person in charge:

Wolfgang Schick
Lehenkreuzweg 12
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Schemmerhofen, September 2010

W. Schick
Geschäftsführer

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